

SEQUENCE LISTING

<110> National Institute of Advanced Industrial Science and Technology
Fujirebio Incorporated

<120> β 1,3-N-ACETYL-D-GALACTOSAMINE TRANSFERASE PROTEIN,
NUCLEIC ACID ENCODING THE SAME AND METHOD OF EXAMINING
CANCERATION USING THE SAME

<130> YCT-910

<160> 27

<210> 1

<211> 1503

<212> DNA

<213> Homo sapiens

<400> 1

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caggtgaaca agctgtggta caagcccggt gaacaattca tcttaccaga gagctttgaa 660
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 taa 1503

<210> 2

<211> 500

<212> PRT

<213> Homo sapiens

<400> 2

Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
 1 5 10 15
 Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
 20 25 30
 Gly Ala Gly Pro Ala Asp Gln Leu Ala Leu Phe Pro Gln Trp Lys Ser
 35 40 45
 Thr His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn His
 50 55 60
 Glu Leu Arg Asn Val Ile Arg Ser Thr Trp Met Arg His Leu Leu Gln

65 70 75 80
 His Pro Thr Leu Ser Gln Arg Val Leu Val Lys Phe Ile Ile Gly Ala
 85 90 95
 His Gly Cys Glu Val Pro Val Glu Asp Arg Glu Asp Pro Tyr Ser Cys
 100 105 110
 Lys Leu Leu Asn Ile Thr Asn Pro Val Leu Asn Gln Glu Ile Glu Ala
 115 120 125
 Phe Ser Leu Ser Glu Asp Thr Ser Ser Gly Leu Pro Glu Asp Arg Val
 130 135 140
 Val Ser Val Ser Phe Arg Val Leu Tyr Pro Ile Val Ile Thr Ser Leu
 145 150 155 160
 Gly Val Phe Tyr Asp Ala Asn Asp Val Gly Phe Gln Arg Asn Ile Thr
 165 170 175
 Val Lys Leu Tyr Gln Ala Glu Gln Glu Glu Ala Leu Phe Ile Ala Arg
 180 185 190
 Phe Ser Pro Pro Ser Cys Gly Val Gln Val Asn Lys Leu Trp Tyr Lys
 195 200 205
 Pro Val Glu Gln Phe Ile Leu Pro Glu Ser Phe Glu Gly Thr Ile Val
 210 215 220
 Trp Glu Ser Gln Asp Leu His Gly Leu Val Ser Arg Asn Leu His Lys
 225 230 235 240
 Val Thr Val Asn Asp Gly Gly Gly Val Leu Arg Val Ile Thr Ala Gly
 245 250 255
 Glu Gly Ala Leu Pro His Glu Phe Leu Glu Gly Val Glu Gly Val Ala
 260 265 270
 Gly Gly Phe Ile Tyr Thr Ile Gln Glu Gly Asp Ala Leu Leu His Asn
 275 280 285
 Leu His Ser Arg Pro Gln Arg Leu Ile Asp His Ile Arg Asn Leu His
 290 295 300

Glu Glu Asp Ala Leu Leu Lys Glu Glu Ser Ser Ile Tyr Asp Asp Ile

305 310 315 320

Val Phe Val Asp Val Val Asp Thr Tyr Arg Asn Val Pro Ala Lys Leu

325 330 335

Leu Asn Phe Tyr Arg Trp Thr Val Glu Thr Thr Ser Phe Asn Leu Leu

340 345 350

Leu Lys Thr Asp Asp Asp Cys Tyr Ile Asp Leu Glu Ala Val Phe Asn

355 360 365

Arg Ile Val Gln Lys Asn Leu Asp Gly Pro Asn Phe Trp Trp Gly Asn

370 375 380

Phe Arg Leu Asn Trp Ala Val Asp Arg Thr Gly Lys Trp Gln Glu Leu

385 390 395 400

Glu Tyr Pro Ser Pro Ala Tyr Pro Ala Phe Ala Cys Gly Ser Gly Tyr

405 410 415

Val Ile Ser Lys Asp Ile Val Lys Trp Leu Ala Ser Asn Ser Gly Arg

420 425 430

Leu Lys Thr Tyr Gln Gly Glu Asp Val Ser Met Gly Ile Trp Met Ala

435 440 445

Ala Ile Gly Pro Lys Arg Tyr Gln Asp Ser Leu Trp Leu Cys Glu Lys

450 455 460

Thr Cys Glu Thr Gly Met Leu Ser Ser Pro Gln Tyr Ser Pro Trp Glu

465 470 475 480

Leu Thr Glu Leu Trp Lys Leu Lys Glu Arg Cys Gly Asp Pro Cys Arg

485 490 495

Cys Gln Ala Arg

500

<210> 3

<211> 1515

<212> DNA

<213> Mouse

<400> 3

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tcagccttat ttctcactg gaaatttagc cactatgatg tggtagttgg tgtgttatca 180
gctcgaaata accacgaact tcgaaatgtg ataaggaaca cctgggtgaa gaatttgctg 240
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gcactgcctc atgaattcat ggaaggtgtg gagggagttg cgggtggctt tatctacact 840
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cacatacagg atctgcaggt ggaagatgcc ttactgcagg aggaaagcag tgtccatgac 960
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gcaaaagtac gatga

1515

<210> 4

<211> 504

<212> PRT

<213> Mouse

<400> 4

Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala

1 5 10 15

Leu His Leu Trp His Leu Trp Leu Arg Ser Pro Pro Asp Pro His Asn

20 25 30

Thr Gly Pro Ser Ala Ala Asp Gln Ser Ala Leu Phe Pro His Trp Lys

35 40 45

Phe Ser His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn

50 55 60

His Glu Leu Arg Asn Val Ile Arg Asn Thr Trp Leu Lys Asn Leu Leu

65 70 75 80

His His Pro Thr Leu Ser Gln Arg Val Leu Val Lys Phe Ile Ile Gly

85 90 95

Ala Arg Gly Cys Glu Val Pro Val Glu Asp Arg Glu Asp Pro Tyr Ser

100 105 110

Cys Arg Leu Leu Asn Ile Thr Asn Pro Val Leu Asn Gln Glu Ile Glu

115 120 125

Ala Phe Ser Phe Pro Glu Asp Ala Ser Ser Ser Arg Leu Ser Glu Asp

130 135 140

Arg Val Val Ser Val Ser Phe Arg Val Leu Tyr Pro Ile Val Ile Thr

145 150 155 160

Ser Leu Gly Val Phe Tyr Asp Ala Ser Asp Val Gly Phe Gln Arg Asn

165	170	175	
Ile Thr Val Lys Leu Tyr Gln Thr Glu Gln Glu Ala Leu Phe Ile			
180	185	190	
Ala Arg Phe Ser Pro Pro Ser Cys Gly Val Gln Val Asn Lys Leu Trp			
195	200	205	
Tyr Lys Pro Val Glu Gln Phe Ile Leu Pro Glu Ser Phe Glu Gly Thr			
210	215	220	
Ile Val Trp Glu Ser Gln Asp Leu His Gly Leu Val Ser Arg Asn Leu			
225	230	235	240
His Arg Val Thr Val Asn Asp Gly Gly Gly Val Leu Arg Val Leu Ala			
245	250	255	
Ala Gly Glu Gly Ala Leu Pro His Glu Phe Met Glu Gly Val Glu Gly			
260	265	270	
Val Ala Gly Gly Phe Ile Tyr Thr Val Gln Glu Gly Asp Ala Leu Leu			
275	280	285	
Arg Ser Leu Tyr Ser Arg Pro Gln Arg Leu Ala Asp His Ile Gln Asp			
290	295	300	
Leu Gln Val Glu Asp Ala Leu Leu Gln Glu Glu Ser Ser Val His Asp			
305	310	315	320
Asp Ile Val Phe Val Asp Val Val Asp Thr Tyr Arg Asn Val Pro Ala			
325	330	335	
Lys Leu Leu Asn Phe Tyr Arg Trp Thr Val Glu Ser Thr Ser Phe Asp			
340	345	350	
Leu Leu Leu Lys Thr Asp Asp Asp Cys Tyr Ile Asp Leu Glu Ala Val			
355	360	365	
Phe Asn Arg Ile Ala Gln Lys Asn Leu Asp Gly Pro Asn Phe Trp Trp			
370	375	380	
Gly Asn Phe Arg Leu Asn Trp Ala Val Asp Arg Thr Gly Lys Trp Gln			
385	390	395	400

Glu Leu Glu Tyr Pro Ser Pro Ala Tyr Pro Ala Phe Ala Cys Gly Ser

405 410 415

Gly Tyr Val Ile Ser Lys Asp Ile Val Asp Trp Leu Ala Gly Asn Ser

420 425 430

Arg Arg Leu Lys Thr Tyr Gln Gly Glu Asp Val Ser Met Gly Ile Trp

435 440 445

Met Ala Ala Ile Gly Pro Lys Arg His Gln Asp Ser Leu Trp Leu Cys

450 455 460

Glu Lys Thr Cys Glu Thr Gly Met Leu Ser Ser Pro Gln Tyr Ser Pro

465 470 475 480

Glu Glu Leu Ser Lys Leu Trp Glu Leu Lys Glu Leu Cys Gly Asp Pro

485 490 495

Cys Gln Cys Glu Ala Lys Val Arg

500 504

<210> 5

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 5' primer for PCR

<400> 5

cccaagcttg ggcctgcaga tcagttggcc ttatttc

37

<210> 6

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 3' primer for PCR

<400> 6

aacgcggatc cgcgctgtta tcttgcttga catcgacaag ga 42

<210> 7

<211> 56

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 5' primer for PCR

<400> 7

ggggacaagt ttgtacaaaa aagcaggctt ccctgcagat cagttggcct tatttc 56

<210> 8

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 3' primer for PCR

<400> 8

ggggaccact ttgtacaaga aagctggggtc ctgttatctt gcttgacatc gacaagga 58

<210> 9

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Ig κ signal sequence

<400> 9

Met His Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser

1 5 10 15

Val Ile Met Ser Arg Gly

20 22

<210> 10

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: FLAG peptide

<400> 10

Asp Tyr Lys Asp Asp Asp Asp Lys

1 5 8

<210> 11

<211> 94

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer OT3

<400> 11

gatcatgcat tttcaagtgc agattttcag cttcctgcta atcagtcgct cagtcataat 60

gtcacgtgga gattacaagg acgacgatga caag 94

<210> 12

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer OT20

<400> 12

cgggatccat gcattttcaa gtgcag 26

<210> 13

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer OT21

<400> 13

ggaattcttg tcatcgctgt ccttg 25

<210> 14

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 5' primer for PCR

<400> 14

ggagtgttct acgatgcaa t 21

<210> 15

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 3' primer for PCR

<400> 15

ctgaagcgag caatgaagag 20

<210> 16

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TaqMan Probe

<400> 16

cactgtcaaa cttatcagg cagaacaaga gg 32

<210> 17

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 5' primer for PCR

<400> 17

cccaagcttg ggagcgcggc agatcaatca gccttat 37

<210> 18

<211> 53

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 3' primer for PCR

<400> 18

ttttcctttt gcggccgctt ttttcctttc atcgacttt tgcttcacac tga 53

<210> 19

<211> 248

<212> PRT

<213> Homo sapiens

<220>

<223> b3Gal-T1

<400> 19

Phe Leu Val Ile Leu Ile Ser Thr Thr His Lys Glu Phe Asp Ala Arg

1 5 10 15

Gln Ala Ile Arg Glu Thr Trp Gly Asp Glu Asn Asn Phe Lys Gly Ile

20 25 30

Lys Ile Ala Thr Leu Phe Leu Leu Gly Lys Asn Ala Asp Pro Val Leu

35 40 45

Asn Gln Met Val Glu Gln Glu Ser Gln Ile Phe His Asp Ile Ile Val

50 55 60

Glu Asp Phe Ile Asp Ser Tyr His Asn Leu Thr Leu Lys Thr Leu Met

65 70 75 80

Gly Met Arg Trp Val Ala Thr Phe Cys Ser Lys Ala Lys Tyr Val Met

85 90 95

Lys Thr Asp Ser Asp Ile Phe Val Asn Met Asp Asn Leu Ile Tyr Lys

100 105 110

Leu Leu Lys Pro Ser Thr Lys Pro Arg Arg Arg Tyr Phe Thr Gly Tyr

115 120 125
 Val Ile Asn Gly Gly Pro Ile Arg Asp Val Arg Ser Lys Trp Tyr Met
 130 135 140
 Pro Arg Asp Leu Tyr Pro Asp Ser Asn Tyr Pro Pro Phe Cys Ser Gly
 145 150 155 160
 Thr Gly Tyr Ile Phe Ser Ala Asp Val Ala Glu Leu Ile Tyr Lys Thr
 165 170 175
 Ser Leu His Thr Arg Leu Leu His Leu Glu Asp Val Tyr Val Gly Leu
 180 185 190
 Ser Leu His Thr Arg Leu Leu His Leu Glu Asp Val Tyr Val Gly Leu
 195 200 205
 His Trp Lys Met Ala Tyr Ser Leu Cys Arg Tyr Arg Arg Val Ile Thr
 210 215 220
 Val His Gln Ile Ser Pro Glu Glu Met His Arg Ile Trp Asn Asp Met
 225 230 235 240
 Ser Ser Lys Lys His Leu Arg Cys
 245 248

<210> 20

<211> 271

<212> PRT

<213> Homo sapiens

<220>

<223> b3Gal-T2

<400> 20

Phe Leu Ile Leu Leu Ile Ala Ala Glu Pro Gly Gln Ile Glu Ala Arg

1 5 10 15

Arg Ala Ile Arg Gln Thr Trp Gly Asn Glu Ser Leu Ala Pro Gly Ile
 20 25 30
 Gln Ile Thr Arg Ile Phe Leu Leu Gly Leu Ser Ile Lys Leu Asn Gly
 35 40 45
 Tyr Leu Gln Arg Ala Ile Leu Glu Glu Ser Arg Gln Tyr His Asp Ile
 50 55 60
 Ile Gln Gln Glu Tyr Leu Asp Thr Tyr Tyr Asn Leu Thr Ile Lys Thr
 65 70 75 80
 Leu Met Gly Met Asn Trp Val Ala Thr Tyr Cys Pro His Ile Pro Tyr
 85 90 95
 Val Met Lys Thr Asp Ser Asp Met Phe Val Asn Thr Glu Tyr Leu Ile
 100 105 110
 Asn Lys Leu Leu Lys Pro Asp Leu Pro Pro Arg His Asn Tyr Phe Thr
 115 120 125
 Gly Tyr Leu Met Arg Gly Tyr Ala Pro Asn Arg Asn Lys Asp Ser Lys
 130 135 140
 Trp Tyr Met Pro Pro Asp Leu Tyr Pro Ser Glu Arg Tyr Pro Val Phe
 145 150 155 160
 Cys Ser Gly Thr Gly Tyr Val Phe Ser Gly Asp Leu Ala Glu Lys Ile
 165 170 175
 Phe Lys Val Ser Leu Gly Ile Arg Arg Leu His Leu Glu Asp Val Tyr
 180 185 190
 Val Gly Ile Cys Leu Ala Lys Leu Arg Ile Asp Pro Val Pro Pro Pro
 195 200 205
 Asn Glu Phe Val Phe Asn His Trp Arg Val Ser Tyr Ser Ser Cys Lys
 210 215 220
 Tyr Ser His Leu Ile Thr Ser His Gln Phe Gln Pro Ser Glu Leu Ile
 225 230 235 240

Lys Tyr Trp Asn His Leu Gln Gln Asn Lys His Asn Ala Cys Ala Asn

245 250 255

Ala Ala Lys Glu Lys Ala Gly Arg Tyr Arg His Arg Lys Leu His

260 265 270 271

<210> 21

<211> 253

<212> PRT

<213> Homo sapiens

<220>

<223> b3Gal-T3

<400> 21

Phe Leu Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg

1 5 10 15

Gln Ala Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr

20 25 30

Glu Val Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp

35 40 45

Lys Met Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp

50 55 60

Ile Ile Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys

65 70 75 80

Thr Ile Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys

85 90 95

Tyr Val Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu

100 105 110

Val Lys Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly

115 120 125

Tyr Pro Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr

130 135 140

His Ile Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys

145 150 155 160

Ser Gly Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr

165 170 175

Glu Met Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val

180 185 190

Gly Ile Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp

195 200 205

Thr Asn Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu

210 215 220

Arg Arg Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr

225 230 235 240

Phe Trp Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr

245 250 253

<210> 22

<211> 253

<212> PRT

<213> Homo sapiens

<220>

<223> b3Gal-T5

<400> 22

Phe Leu Val Leu Leu Val Thr Ser Ser His Lys Gln Leu Ala Glu Arg

1 5 10 15

Met Ala Ile Arg Gln Thr Trp Gly Lys Glu Arg Met Val Lys Gly Lys

20 25 30

Gln Leu Lys Thr Phe Phe Leu Leu Gly Thr Thr Ser Ser Ala Ala Glu

35 40 45

Thr Lys Glu Val Asp Gln Glu Ser Gln Arg His Gly Asp Ile Ile Gln

50 55 60

Lys Asp Phe Leu Asp Val Tyr Tyr Asn Leu Thr Leu Lys Thr Met Met

65 70 75 80

Gly Ile Glu Trp Val His Arg Phe Cys Pro Gln Ala Ala Phe Val Met

85 90 95

Lys Thr Asp Ser Asp Met Phe Ile Asn Val Asp Tyr Leu Thr Glu Leu

100 105 110

Leu Leu Lys Lys Asn Arg Thr Thr Arg Phe Phe Thr Gly Phe Leu Lys

115 120 125

Leu Asn Glu Phe Pro Ile Arg Gln Pro Phe Ser Lys Trp Phe Val Ser

130 135 140

Lys Ser Glu Tyr Pro Trp Asp Arg Tyr Pro Pro Phe Cys Ser Gly Thr

145 150 155 160

Gly Tyr Val Phe Ser Gly Asp Val Ala Ser Gln Val Tyr Asn Val Ser

165 170 175

Lys Ser Val Pro Tyr Ile Lys Leu Glu Asp Val Phe Val Gly Leu Cys

180 185 190

Leu Glu Arg Leu Asn Ile Arg Leu Glu Glu Leu His Ser Gln Pro Thr

195 200 205

Phe Phe Pro Gly Gly Leu Arg Phe Ser Val Cys Leu Phe Arg Arg Ile

210 215 220

Val Ala Cys His Phe Ile Lys Pro Arg Thr Leu Leu Asp Tyr Trp Gln

225 230 235 240

Ala Leu Glu Asn Ser Arg Gly Glu Asp Cys Pro Pro Val

245 250 253

<210> 23

<211> 272

<212> PRT

<213> Homo sapiens

<220>

<223> b3Gal-T6

<400> 23

Phe Leu Ala Val Leu Val Ala Ser Ala Pro Arg Ala Ala Glu Arg Arg

1 5 10 15

Ser Val Ile Arg Ser Thr Trp Leu Ala Arg Arg Gly Ala Pro Gly Asp

20 25 30

Val Trp Ala Arg Phe Ala Val Gly Thr Ala Gly Leu Gly Ala Glu Glu

35 40 45

Arg Arg Ala Leu Glu Arg Glu Gln Ala Arg His Gly Asp Leu Leu Leu

50 55 60

Leu Pro Ala Leu Arg Asp Ala Tyr Glu Asn Leu Thr Ala Lys Val Leu

65 70 75 80

Ala Met Leu Ala Trp Leu Asp Glu His Val Ala Phe Glu Phe Val Leu

85 90 95

Lys Ala Asp Asp Asp Ser Phe Ala Arg Leu Asp Ala Leu Leu Ala Glu

100 105 110

Leu Arg Ala Arg Glu Pro Ala Arg Arg Arg Arg Leu Tyr Trp Gly Phe

115 120 125

Phe Ser Gly Arg Gly Arg Val Lys Pro Gly Gly Arg Trp Arg Glu Ala

130 135 140

Ala Trp Gln Leu Cys Asp Tyr Tyr Leu Pro Tyr Ala Leu Gly Gly Gly

145 150 155 160

Tyr Val Leu Ser Ala Asp Leu Val His Tyr Leu Arg Leu Ser Arg Asp

165 170 175

Tyr Leu Arg Ala Trp His Ser Glu Asp Val Ser Leu Gly Ala Trp Leu

180 185 190

Ala Pro Val Asp Val Gln Arg Glu His Asp Pro Arg Phe Asp Thr Glu

195 200 205

Tyr Arg Ser Arg Gly Cys Ser Asn Gln Tyr Leu Val Thr His Lys Gln

210 215 220

Ser Leu Glu Asp Met Leu Glu Lys His Ala Thr Leu Ala Arg Glu Gly

225 230 235 240

Arg Leu Cys Lys Arg Glu Val Gln Leu Arg Leu Ser Tyr Val Tyr Asp

245 250 255

Trp Ser Ala Pro Pro Ser Gln Cys Cys Gln Arg Arg Glu Gly Ile Pro

260 265 270 272

<210> 24

<211> 255

<212> PRT

<213> Homo sapiens

<220>

<223> b3GnT2

<400> 24

Phe Leu Leu Leu Ala Ile Lys Ser Leu Thr Pro His Phe Ala Arg Arg

1 5 10 15

Gln Ala Ile Arg Glu Ser Trp Gly Gln Glu Ser Asn Ala Gly Asn Gln

20 25 30

Thr Val Val Arg Val Phe Leu Leu Gly Gln Thr Pro Pro Glu Asp Asn

35 40 45

His Pro Asp Leu Ser Asp Met Leu Lys Phe Glu Ser Glu Lys His Gln

50 55 60

Asp Ile Leu Met Trp Asn Tyr Arg Asp Thr Phe Phe Asn Leu Ser Leu

65 70 75 80

Lys Glu Val Leu Phe Leu Arg Trp Val Ser Thr Ser Cys Pro Asp Thr

85 90 95

Glu Phe Val Phe Lys Gly Asp Asp Asp Val Phe Val Asn Thr His His

100 105 110

Ile Leu Asn Tyr Leu Asn Ser Leu Ser Lys Thr Lys Ala Lys Asp Leu

115 120 125

Phe Ile Gly Asp Val Ile His Asn Ala Gly Pro His Arg Asp Lys Lys

130 135 140

Leu Lys Tyr Tyr Ile Pro Glu Val Val Tyr Ser Gly Leu Tyr Pro Pro

145 150 155 160

Tyr Ala Gly Gly Gly Gly Phe Leu Tyr Ser Gly His Leu Ala Leu Arg

165 170 175

Leu Tyr His Ile Thr Asp Gln Val His Leu Tyr Pro Ile Asp Asp Val

180 185 190

Tyr Thr Gly Met Cys Leu Gln Lys Leu Gly Leu Val Pro Glu Lys His

195 200 205

Lys Gly Phe Arg Thr Phe Asp Ile Glu Glu Lys Asn Lys Asn Asn Ile

210 215 220

Cys Ser Tyr Val Asp Leu Met Leu Val His Ser Arg Lys Pro Gln Glu

225 230 235 240

Met Ile Asp Ile Trp Ser Gln Leu Gln Ser Ala His Leu Lys Cys

245 250 255

<210> 25

<211> 265

<212> PRT

<213> Homo sapiens

<220>

<223> b3GnT3

<400> 25

Phe Leu Leu Leu Val Ile Lys Ser Ser Pro Ser Asn Tyr Val Arg Arg

1 5 10 15

Glu Leu Leu Arg Arg Thr Trp Gly Arg Glu Arg Lys Val Arg Gly Leu

20 25 30

Gln Leu Arg Leu Leu Phe Leu Val Gly Thr Ala Ser Asn Pro His Glu

35 40 45

Ala Arg Lys Val Asn Arg Leu Leu Glu Leu Glu Ala Gln Thr His Gly

50 55 60

Asp Ile Leu Gln Trp Asp Phe His Asp Ser Phe Phe Asn Leu Thr Leu

65 70 75 80

Lys Gln Val Leu Phe Leu Gln Trp Gln Glu Thr Arg Cys Ala Asn Ala

85 90 95

Ser Phe Val Leu Asn Gly Asp Asp Asp Val Phe Ala His Thr Asp Asn

100 105 110

Met Val Phe Tyr Leu Gln Asp His Asp Pro Gly Arg His Leu Phe Val

115 120 125
 Gly Gln Leu Ile Gln Asn Val Gly Pro Ile Arg Ala Phe Trp Ser Lys
 130 135 140
 Tyr Tyr Val Pro Glu Val Val Thr Gln Asn Glu Arg Tyr Pro Pro Tyr
 145 150 155 160
 Cys Gly Gly Gly Gly Phe Leu Leu Ser Arg Phe Thr Ala Ala Ala Leu
 165 170 175
 Arg Arg Ala Ala His Val Leu Asp Ile Phe Pro Ile Asp Asp Val Phe
 180 185 190
 Leu Gly Met Cys Leu Glu Leu Glu Gly Leu Lys Pro Ala Ser His Ser
 195 200 205
 Gly Ile Arg Thr Ser Gly Val Arg Ala Pro Ser Gln His Leu Ser Ser
 210 215 220
 Phe Asp Pro Cys Phe Tyr Arg Asp Leu Leu Leu Val His Arg Phe Leu
 225 230 235 240
 Pro Tyr Glu Met Leu Leu Met Trp Asp Ala Leu Asn Gln Pro Asn Leu
 245 250 255
 Thr Cys Gly Asn Gln Thr Gln Ile Tyr
 260 265

<210> 26

<211> 260

<212> PRT

<213> Homo sapiens

<220>

<223> b3GnT4

<400> 26

Phe Leu Leu Leu Ala Ile Lys Ser Gln Pro Gly His Val Glu Arg Arg
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Ala Ala Ile Arg Ser Thr Trp Gly Arg Val Gly Gly Trp Ala Arg Gly
 20 25 30
Arg Gln Leu Lys Leu Val Phe Leu Leu Gly Val Ala Gly Ser Ala Pro
 35 40 45
Pro Ala Gln Leu Leu Ala Tyr Glu Ser Arg Glu Phe Asp Asp Ile Leu
 50 55 60
Gln Trp Asp Phe Thr Glu Asp Phe Phe Asn Leu Thr Leu Lys Glu Leu
65 70 75 80
His Leu Gln Arg Trp Val Val Ala Ala Cys Pro Gln Ala His Phe Met
 85 90 95
Leu Lys Gly Asp Asp Asp Val Phe Val His Val Pro Asn Val Leu Glu
 100 105 110
Phe Leu Asp Gly Trp Asp Pro Ala Gln Asp Leu Leu Val Gly Asp Val
 115 120 125
Ile Arg Gln Ala Leu Pro Asn Arg Asn Thr Lys Val Lys Tyr Phe Ile
 130 135 140
Pro Pro Ser Met Tyr Arg Ala Thr His Tyr Pro Pro Tyr Ala Gly Gly
145 150 155 160
Gly Gly Tyr Val Met Ser Arg Ala Thr Val Arg Arg Leu Gln Ala Ile
 165 170 175
Met Glu Asp Ala Glu Leu Phe Pro Ile Asp Asp Val Phe Val Gly Met
 180 185 190
Cys Leu Arg Arg Leu Gly Leu Ser Pro Met His His Ala Gly Phe Lys
 195 200 205
Thr Phe Gly Ile Arg Arg Pro Leu Asp Pro Leu Asp Pro Cys Leu Tyr
 210 215 220
Arg Gly Leu Leu Leu Val His Arg Leu Ser Pro Leu Glu Met Trp Thr

225 230 235 240
 Met Trp Ala Leu Val Thr Asp Glu Gly Leu Lys Cys Ala Ala Gly Pro
 245 250 255
 Ile Pro Gln Arg
 260

<210> 27
 <211> 290
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 <213> Homo sapiens

<220>
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<400> 27
 Leu Leu Leu Leu Phe Val Lys Thr Ala Pro Glu Asn Tyr Asp Arg Arg
 1 5 10 15
 Ser Gly Ile Arg Arg Thr Trp Gly Asn Glu Asn Tyr Val Arg Ser Gln
 20 25 30
 Leu Asn Ala Asn Ile Lys Thr Leu Phe Ala Leu Gly Thr Pro Asn Pro
 35 40 45
 Leu Glu Gly Glu Glu Leu Gln Arg Lys Leu Ala Trp Glu Asp Gln Arg
 50 55 60
 Tyr Asn Asp Ile Ile Gln Gln Asp Phe Val Asp Ser Phe Tyr Asn Leu
 65 70 75 80
 Thr Leu Lys Leu Leu Met Gln Phe Ser Trp Ala Asn Thr Tyr Cys Pro
 85 90 95
 His Ala Lys Phe Leu Met Thr Ala Asp Asp Asp Ile Phe Ile His Met
 100 105 110

Pro Asn Leu Ile Glu Tyr Leu Gln Ser Leu Glu Gln Ile Gly Val Gln

115 120 125

Asp Phe Trp Ile Gly Arg Val His Arg Gly Ala Pro Pro Ile Arg Asp

130 135 140

Lys Ser Ser Lys Tyr Tyr Val Ser Tyr Glu Met Tyr Gln Trp Pro Ala

145 150 155 160

Tyr Pro Asp Tyr Thr Ala Gly Ala Ala Tyr Val Ile Ser Gly Asp Val

165 170 175

Ala Ala Lys Val Tyr Glu Ala Ser Gln Thr Leu Asn Ser Ser Leu Tyr

180 185 190

Ile Asp Asp Val Phe Met Gly Leu Cys Ala Asn Lys Ile Gly Ile Val

195 200 205

Pro Gln Asp His Val Phe Phe Ser Gly Glu Gly Lys Thr Pro Tyr His

210 215 220

Pro Cys Ile Tyr Glu Lys Met Met Thr Ser His Gly His Leu Glu Asp

225 230 235 240

Leu Gln Asp Leu Trp Lys Asn Ala Thr Asp Pro Lys Val Lys Thr Ile

245 250 255

Ser Lys Gly Phe Phe Gly Gln Ile Tyr Cys Arg Leu Met Lys Ile Ile

260 265 270

Leu Leu Cys Lys Ile Ser Tyr Val Asp Thr Tyr Pro Cys Arg Ala Ala

275 280 285

Phe Ile

290